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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/501,114	02/10/2000	Yonhua Tzeng	A029 1080	3416

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EXAMINER
MARKHAM, WESLEY D

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 01/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/501,114	Applicant(s) TZENG, YONHUA
	Examiner Wesley D Markham	Art Unit 1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2001* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3 and 5-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3 and 5-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Acknowledgement is made of applicant's amendment A, filed as paper #4 on October 24, 2001, in which the specification was amended, Claims 2 and 4 were canceled without prejudice or disclaimer, and Claims 1, 3, 5, 8, 11, 13, and 17 were amended. Claims 1, 3, and 5 – 18 are currently pending in U.S. Application Serial # 09/501,114, and an Office Action on the merits follows.

Priority

1. Acknowledgement is made of the applicant's affirmation that the instant application claims priority under 35 U.S.C. 119 to Provisional Application Serial No. 60/119,771.

Specification

2. The objections to the specification, set forth in paragraph 4 of the previous Office Action, are withdrawn in light of applicant's amendment A.
3. The use of the trademark TEFLON (page 10, line 6 of the applicant's specification) has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology. Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks (see paragraph 5 of the previous Office Action).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. The rejection of Claim 18 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention, set forth in paragraph 7 of the previous Office Action, is withdrawn in light of applicant's amendment A.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. The rejection of Claims 4 – 5, 11, and 17 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, is withdrawn in light of applicant's amendment A, which corrected the appropriate Markush group language.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that formed the basis for the rejections under this section made in the previous Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. The rejection of Claims 1 – 2, 4 – 7, and 9 – 12 under 35 U.S.C. 102(b) as being anticipated by Idemitsu Petrochem Co (JP 05-247651 A), set forth in paragraphs 12 – 14 of the previous Office Action, is withdrawn in light of applicant's amendment A. Specifically, amended independent Claim 1 now requires that a liquid precursor be introduced into the reaction chamber and vaporized, which is not explicitly taught by Idemitsu Petrochem Co.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The rejection of Claim 3 under 35 U.S.C. 103(a) as being unpatentable over Idemitsu Petrochem Co (JP 05-247651 A), set forth in paragraphs 16 – 17 of the

previous Office Action, the rejection of Claim 8 under 35 U.S.C. 103(a) as being unpatentable over Idemitsu Petrochem Co (JP 05-247651 A) in view of Glesener et al. (USPN 5,381,755), set forth in paragraphs 18 – 19 of the previous Office Action, and the rejection of Claims 13 – 18 under 35 U.S.C. 103(a) as being unpatentable over Idemitsu Petrochem Co (JP 05-247651 A) in view of Aida (USPN 5,225,275), set forth in paragraphs 20 – 22 of the previous Office Action, are withdrawn in light of applicant's amendment A. Specifically, amended independent Claims 1 and 13 now require that a liquid precursor be introduced into the reaction chamber and vaporized, which is not explicitly taught or suggested by the above references, alone or in combination.

12. Claims 1, 3, 5 – 7, and 9 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Idemitsu Petrochem Co (JP 05-247651 A) in view of Robson et al. (USPN 5,874,014) for the reasons set forth in paragraphs 12 – 17 of the previous Office Action and below.
13. Applicant's arguments filed on 10/24/01 have been fully considered but they are not persuasive / are moot in view of the new grounds of rejection.
14. Specifically, the applicant argues that the full scope of the Idemitsu Petrochem Co reference cannot be determined at this point in time since the reference is in Japanese and the English translation that has been provided includes only the Abstract. In response, a full translation of the Idemitsu Petrochem Co reference is provided in support of the rejections made in the previous Office Action based on

oral translations (see especially paragraphs [0012] to [0018] of the translated reference). Second, the applicant argues that it appears that Idemitsu Petrochem Co requires that a gaseous component, such as hydrogen gas, be introduced with the introduction of the precursor during the deposition process. In response, Idemitsu Petrochem Co requires that the plasma be either a plasma of a carbon containing compound or a gas mixture of the carbon containing compound and hydrogen gas (See Basic-Abstract). Thus, hydrogen gas is not required by Idemitsu Petrochem Co. The examiner does note that Idemitsu Petrochem Co does not explicitly teach that a liquid precursor is introduced into the reaction chamber and vaporized, as required by amended independent Claim 1. However, Idemitsu Petrochem Co teaches / suggests all the limitations of Claims 1, 3, 5 – 7, and 9 – 12 as set forth in paragraphs 12 – 17 of the previous Office Action except that a liquid precursor is introduced into the reaction chamber and vaporized. In addition, Idemitsu Petrochem Co does teach using compounds such as methanol and acetone in combination in their process and introducing them in the gaseous form into the reaction chamber (See Basic-Abstract and paragraphs [0013] – [0014]). Robson et al. teach that, in the art of depositing diamond films by plasma CVD using feedstocks such as alcohols (i.e., an analogous process to the process performed by Idemitsu Petrochem Co), the feedstock is generally gaseous or vaporizes to a gaseous form upon introduction into the chamber (Col.13, lines 15 – 38). Therefore, it would have been obvious to one of ordinary skill in the art to introduce the mixed methanol precursor of Idemitsu Petrochem Co into the reaction

chamber in liquid form and to allow the precursor to vaporize to a gaseous form upon introduction into the chamber with the reasonable expectation of obtaining similar results because Robson et al. teach the functional equivalence of introducing a gaseous (i.e., previously vaporized) precursor into the chamber (i.e., the process suggested by Idemitsu Petrochem Co) and introducing a liquid precursor that vaporizes to a gaseous form upon introduction into the chamber. In addition, one of ordinary skill in the art would have done so with the reasonable expectation of success, as the precursor mixture components taught by Idemitsu Petrochem Co such as methanol, ethanol, and acetone, are liquids at room temperature and thus would have been capable of being introduced into the chamber in liquid form.

15. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Idemitsu Petrochem Co (JP 05-247651 A) in view of Robson et al. (USPN 5,874,014) in further view of Glesener et al. (USPN 5,381,755) for the reasons set forth in paragraphs 18 – 19 of the previous Office Action, paragraph 14 above, and the remarks below.

16. Applicant's arguments with respect to Claim 8 have been considered but are moot in view of the new ground(s) of rejection. Specifically, the applicant argues that neither Idemitsu Petrochem Co nor Glesener et al. teach or suggest utilizing a dopant in a process in which a liquid precursor is introduced into a reaction chamber. However, it would have been obvious to one of ordinary skill in the art to introduce the mixed methanol precursor of Idemitsu Petrochem Co into the reaction

chamber in liquid form and to allow the precursor to vaporize to a gaseous form upon introduction into the chamber in view of the teaching of Robson et al. for the reasons set forth in paragraph 14 above. Further, it would have been obvious to one of ordinary skill in the art to incorporate a dopant into the precursor composition of Idemitsu Petrochem Co as taught by Glesener et al. for the reasons set forth in paragraphs 18 – 19 of the previous Office Action.

17. Claims 13 – 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Idemitsu Petrochem Co (JP 05-247651 A) in view of Aida (USPN 5,225,275) in further view of Robson et al. (USPN 5,874,014) for the reasons set forth in paragraphs 20 – 22 of the previous Office Action, paragraph 14 above, and the remarks below.

18. Applicant's arguments with respect to Claims 13 – 18 have been considered but are moot in view of the new ground(s) of rejection. Specifically, the applicant argues that neither Idemitsu Petrochem Co nor Aida teaches the introduction of a liquid precursor into the reaction chamber, only gaseous streams. However, it would have been obvious to one of ordinary skill in the art to introduce the mixed methanol precursor of Idemitsu Petrochem Co into the reaction chamber of Aida in liquid form and to allow the precursor to vaporize to a gaseous form upon introduction into the chamber in view of the teaching of Robson et al. for the reasons set forth in paragraph 14 above.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pryor (USPN 5,236,545) teaches a microwave plasma CVD method for depositing a diamond film which utilizes a gaseous feedstock comprising mixtures of carbon containing gases (see Col.9). Iida et al. (USPN 5,112,775) teach a hot filament CVD method for depositing a doped diamond film which utilizes a methanol / acetone feedstock with a dopant dissolved therein (see Experimental Example 1). Miyanaga et al. (USPN 5,626,922) teach a microwave plasma CVD method for depositing DLC films using either gaseous or liquid (i.e., ethanol or methanol) precursor feedstocks (see Abstract and Col.5).

20. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

21. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (703) 308-7557. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

23. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

24. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Wesley D Markham
Examiner
Art Unit 1762

WDM
December 28, 2001

BRET CHEN
PRIMARY EXAMINER